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EXAMINER

FINK, BRIEANN R

ART UNIT

PAPER NUMBER

1796

MAIL DATE

DELIVERY MODE

06/15/2009

PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

DETAILED ACTION

1. This office action follows a reply filed on April 7, 2009. Claim 23 has been amended. Claims 23-25 and 32-43 are currently pending and under examination.
2. The texts of those sections of Title 35 U.S. Code are not included in this section and can be found in a prior Office action

Election/Restrictions

3. Applicant's election with traverse of the complex of an organoboron compound and an organosilicon compound in the reply filed on April 7, 2009 is acknowledged. The traversal is on the ground(s) that the inventions do not impose an undue burden of examination. This is not found persuasive because Group I and Group II still lack the same technical feature, as was stated in the previous action: the silsesquioxane.

The requirement is still deemed proper and is therefore made FINAL.

Claim Rejections - 35 USC § 103

4. Claims 23-26 and 30 are rejected under 35 U.S.C. 103(a) as being unpatentable over *Sonnenschein et al.* (US 6,777,512) in view of *Lichtenhan et al.* (US 2003/0055193).

Sonnenschein et al. teaches an organoborane amine complex that dissociates to initiate polymerization (col. 3, ll. 42-43). The organoborane is a trialkyl borane or an alkyl cycloalkyl borane (col. 3, ll. 65-66). *Sonnenschein et al.* teaches that the amines used to complex the organoborane can be any amine (or mixture of amines) which complex the organoborane and can be further decomplexed (col. 4, ll. 11-14). A preferred amine is one comprising a

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compound having a primary amine and hydrogen bond accepting groups, which are separated by at least two to three carbon atoms (col. 5, ll. 8-14). The amines can be amino siloxanes (col. 9, ll. 10-11). The amine can also be an amine terminated polysiloxane (col. 10, ll. 18-19). The amines are preferably primary or secondary amines (col. 4, ll. 44-45).

Sonnenschein et al. does not teach the polysiloxane as being specifically a silsesquioxane.

Lichtenhan et al., however, teaches processes for functionalizing polyhedral oligomeric silsesquioxanes (p. 1, [0002]). The silsesquioxanes can be functionalized with amines, aliphatic and aromatic (p. 8, [0055]). Process III, shown in Scheme 4 (p. 8) is taught to produce functionalized polyhedral oligomeric silsesquioxanes that are useful as crosslinkers in polymerizations (p. 7, [0049]). *Lichtenhan et al.* further teaches that incorporation of polyhedral oligomeric silsesquioxanes into polymer materials results in a material with improved thermal, mechanical, and physical properties (p. 1 [0003]).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to have modified the organoborane amine complex of *Sonnenschein et al.* by using a silsesquioxane in the amine terminated polysiloxane as suggested by *Lichtenhan et al.* because it would give polymer compositions which are more stable at higher temperatures, as well as improved mechanical strength.

As to claim 24, *Sonnenschein et al.* teaches that the alkyl groups of the organoborane have one to ten carbon atoms.

As to claim 25, *Sonnenschein et al.* teaches the preferred organoboranes of the following: tri-ethyl borane, tri-isopropyl borane, and tri-n-butyl borane.

5. The rejections, as set forth in the previous office action, are deemed proper and are therefore maintained.

Response to Arguments

6. Applicant's arguments filed April 7, 2009 have been fully considered but they are not persuasive.

a. Applicants argue that the above rejection does not present a case of *prima facie* obviousness because "one of ordinary skill in the art would be subjected to randomly selecting from a potentially infinite number of combinations of amines and silsesquioxanes in order to arrive at the particular combination...".

The above rejection is able to show that one of ordinary skill in the art could have combined the claimed elements by known methods and that the elements in combination would be reasonably expected to perform the same function as any other complex of an organoboron and organosilicon. The burden then shifts to the applicants to show that the subject matter would have been nonobvious, which may include evidence of unexpected results. "A mere statement or argument that the Office has not established a *prima facie* case of

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obviousness...will not be considered substantively adequate to rebut the rejection..." See MPEP 2141 IV and V.

The examples cannot be relied on to show unexpected results because there is no showing that a complex with a silsesquioxane is better than other siloxanes. In fact the examples all use a combination of a silsesquioxane complex with that of a siloxane complex.

Conclusion

THIS ACTION IS MADE FINAL. Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Briann R. Fink whose telephone number is (571)270-7344. The examiner can normally be reached on Monday through Friday, 7:00 AM to 4:30 PM (EST).

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If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Randy P. Gulakowski can be reached on (571)272-1302. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/B. R. F./
Examiner, Art Unit 1796

/Randy Gulakowski/
Supervisory Patent Examiner, Art Unit 1796